HIERARCHICAL DIFFERENCES IN NAVY FUNCTIONING

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13 ABSTRACT

This investigation had as its major goal an expansion and clarification of information from earlier reports focusing upon the Navy as a functioning organization. Three areas of interest formed the bases of this study. The first was differences in policies and practices across organizational levels within the Navy, and comparability of these factors with appropriately matched levels from civilian organizations. The second area concerned the relative influences of organizational level and age upon the reported differences within the Navy. The third area of interest was with relationships among four major factors within the Navy and the comparability with similar relationships within civilian business and industrial organizations.

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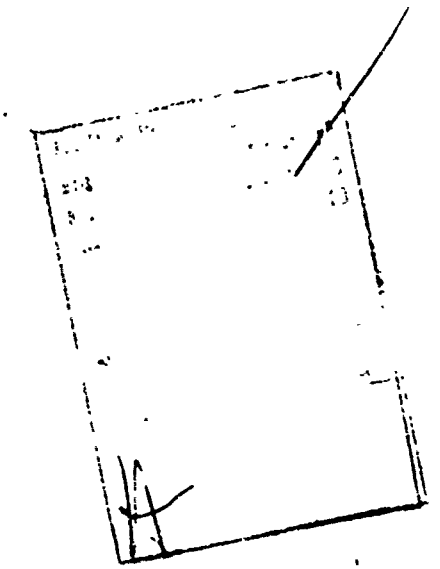

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HIERARCHICAL DIFFERENCES IN NAVY FUNCTIONING

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INTRODUCTION

This is one of a series of reports focusing upon the United States Navy as a functioning organization in the context of a no-draft armed forces. This report aims at expanding the findings of other investigations which have explored differences in organizational policies, practices and resulting levels of satisfaction. Of special note is an earlier report by Bowers and Franklin (1973) which (1) compared the total Navy with civilian organizations, (2) examined differences between ship and shore units within the Navy, and (3) compared organizational policies and practices as reported by persons serving on different ship types. In addition, this earlier study examined differences experienced by different age groups and indicated that young Navy personnel reported worse organizational conditions and practices than either older Navy personnel or their civilian peers. Although not part of this series, a second report by Franklin (1973) is of note since it serves as the basis for comparing relationships among key social-psychological factors in the Navy with these same factors within civilian business and industrial organizations.

This present report explores many of the same measures of organizational policies and practices considered in the two studies noted above, and expands the investigation to consider groups at various organizational levels within the Navy. Several major questions form the basis of this study:

> Are differences reported in organizational conditions and practices across organizational levels within the Navy?
>
> How do these conditions and practices within the Navy compare with civilian organizations when appropriate organizational levels are compared?
>
> If differences exist within the Navy, are they more closely related to age or organizational level?
>
> What is the strength of relationships among major indicators of organizational functioning in the Navy?
>
> How do these relationships compare with relationships reported in civilian organizations?

The answers to these questions are important for understanding the way the Navy now functions and to plan adaptive changes required by changing societal values and needs.

METHOD

SUBJECTS

To answer these and other questions a survey was administered to a sample of Navy units to obtain measures of organizational conditions and practices. A detailed description of the sampling technique as well as a description of the generalizability of the sample to the Navy population is presented by Michaelsen (1973). A summary of these procedures follows.

Data from the Navy were collected from personnel in both ship and shore stations between November 1972 and February 1973. The surveys were personally administered by staff from the Institute for Social Research.

Ships were included from both the Atlantic and Pacific Fleets. Individuals in the sample were chosen in proportion to the number of personnel assigned to each ship type. For example, if 35 percent of the Navy personnel assigned to ships were aboard destroyers, 35 percent of the individuals included in the sample were selected from destroyers. Ships themselves were chosen largely on the basis of availability, with the specific ship selection occasionally influenced by the logistics of moving Institute for Social Research staff from one ship to another. As may be imagined, weather was also an occasional element in determining whether the necessary connections between two ships could be made.

For at least two reasons, an effort was made to maximize in the sample as many ships as possible currently deployed away from their home ports. First, larger proportions of the billets are in fact filled on deployed ships than on ships in port. Second, personnel aboard deployed ships are more likely to have had a period of exposure to the organizational variables being measured. For these reasons, more than half of the ships sampled were deployed at the time of the administration of the survey.

Shore stations were included from eight shore station commands--Atlantic Fleet, Pacific Fleet, Training, Material, Personnel, Medicine and Surgery, Security, and Communications--and from the CNO staff. Individuals in the sample were chosen in proportion to the number of personnel assigned to each command. Specific shore stations were randomly selected from those available in four geographical areas--East Coast, Memphis-Pensacola, San

Diego, and Hawaii.

Personnel actually surveyed in a particular site were members of intact organizational subunits. These subunits consisted of work groups related to one another through supervisors who are, at the same time, a superior of the group they supervise and a subordinate in the group immediately above. In this fashion, one may conceive of the organization as a structure of overlapping groups, a pyramid of interlaced pyramids. For purposes of identifying and selecting intact units for the study's analytic aims, the sampling basis was designated as a "module," by which is meant a "pyramid" of groups three echelons tall. Thus, members from four adjacent levels were included, with the module head defined as the person at the apex of that particular three-tier pyramid. Another criterion for the selection of a module was that the person at the apex--the module head-- had been at this current assignment for at least three months.

A list of all personnel at a site who met the criteria for module head was obtained from manpower authorization documents and from organizational charts. An appropriate number of module heads were randomly selected from these sources. If a particular module did not provide a large enough sample of personnel required for the particular site, another module head was selected by the same method. Thus, the sample from a site consisted of one or more modules.

The sampling procedure resulted in data collection from 38 different Navy sites and a total sample size of 2522 Navy personnel.

MEASURES

The measures used in this study were extracted from Section A of the Navy questionnaire administered for the series of investigations of which this is one. This portion of the survey drew heavily from a standardized questionnaire developed by the Organizational Development Research Program at the Institute for Social Research for use in civilian business and industrial settings. Termed the Survey of Organizations, this questionnaire is described in detail by Taylor and Bowers (1972) in a volume including reliability and validity statistics, and by Michaelsen (1973) in the methods report for this project. Fifteen multi-item indices from the

Survey of Organizations together with three major factors were used in this study. The indices fell into five major categories: (1) Organizational Climate, (2) Supervisory Leadership, (3) Peer Leadership, (4) Group Process, (5) Satisfaction. Brief descriptions of these categories and the indices are presented below:

Organizational Climate

Human Resources Primacy -- the extent to which the climate, as reflected in the organization's practices, is one which asserts that people are among the organization's most important assets.

Decision Making Practices -- the manner in which decisions are made in the system: whether they are made effectively, made at the right level, and based upon all of the available information.

Communication Flow -- the extent to which information flows freely in all directions (upward, downward, and laterally) through the organization.

Motivational Conditions -- the extent to which conditions (people, policies, and procedures) in the organization encourage or discourage effective work.

Lower Level Influence -- the extent to which non-supervisory personnel and first-line supervisors can influence the course of events in their work areas.

Supervisory Leadership

Supervisory Support -- the behavior of a supervisor toward a subordinate which serves to increase the subordinate's feeling of personal worth.

Supervisory Goal Emphasis -- behavior which generates enthusiasm (not pressure) for achieving excellent performance levels.

Supervisory Work Facilitation -- behavior on the part of supervisors which removes obstacles which hinder successful task completion, or positively, which provides the means necessary for successful performance.

Supervisory Team Building -- behavior which encourages subordinates to develop mutually satisfying interpersonal relationships.

Peer Leadership

Peer Support -- behavior of subordinates, directed toward one another, which enhances each member's feeling of personal worth.

Peer Goal Emphasis -- behavior on the part of subordinates which stimulates enthusiasm for doing a good job.

Peer Work Facilitation -- behavior which removes roadblocks to doing a good job.

Peer Team Building -- behavior of subordinates toward one another which encourages the development of close, cooperative working relationships.

Group Process -- the processes and functioning of the work group as a group, e.g., adaptability, coordination, and the like.

Satisfaction -- a measure of general satisfaction made up of items tapping satisfaction with pay, with the supervisor, with co-workers (peers), with the organization, with advancement opportunities, and with the job itself.

The three major factors--Organizational Climate, Supervisory Leadership, Peer Leadership--were created by computing the average score for the indices included in each factor.

For the analyses in this study data on all measures were aggregated on a group-level basis and identified according to one of six Navy organizational levels. As a part of the questionnaire completion process respondents identified their immediate supervisor. Group data was obtained by computing average scores for all persons designating the same supervisor. Organizational level was determined by the rank of the groups' supervisors. These ranks ranged from Seaman Recruit through Rear Admiral. However, since very few Seamen were supervisors, all ranks below Petty Officer 3rd class were eliminated as designations of level. Six organizational levels were identified in this manner.

For the purpose of comparing data from these Navy levels with civilian norms, each supervisor's Navy rank was matched with an organizational level judged approximately equivalent in civilian organizations. Thus, groups supervised by Captains and Rear Admirals were judged equivalent to top managers in civilian organizations, and those supervised by E-4 through E-6 Petty Officers were judged equivalent to first-line civilian supervisors.

Other Navy rank classifications were somewhat more difficult to match with civilian equivalents. This resulted from the separation of at least three different types of rankings. The Enlisted men--E-4 through E-9--are often considered part of a hierarchy separate from Officers, and both of these classifications are viewed as separate from Warrant Officers. Based upon this knowledge and some initial analyses, a classification system was devised to account for the special nature of these various differences and to match at least one Navy level with each of the four basic civilian levels--Top Management, Upper-Middle Management, Lower-Middle Management, First-Line Supervisor. The three Officer categories were judged equivalent to civilian Top Management, Upper-Middle Management, and Lower-Middle Management levels while the two Enlisted categories were matched with Lower-Middle Management and First-Line Supervisory levels. All Warrant Officers were matched with civilian Upper-Middle Management levels.

The six Navy levels together with the ranks of the supervisor of the groups at each level and the number of such groups included in this study are presented in Table 1.

ANALYSIS PROCEDURES

The primary analytic strategies included an evaluation of differences in mean scores across several level and age categories; a determination of variance in a dependent variable--measure of organizational policies or practices--accounted for by one or more predictor variables--level and age; and, the determination of unique effects of a single predictor--level or age--controlling for the effects of another variable--level or age. The basic statistics were obtained through various procedures including analysis of variance, Multiple Classification Analysis (Andrews, Morgan, & Sonquist, 1967), and multiple regression. Further descriptions of the less widely known of these procedures and statistics appear in the Results section.

Table 1

SIX LEVEL DESIGNATIONS, EQUIVALENT CIVILIAN LEVELS,
AND NUMBER OF GROUPS IN EACH NAVY LEVEL

Level	Civilian Equivalent	Rank of Navy Superior	Number of Groups
1	Top Mgmt.	Captain and Rear Admiral	13
2	Upper-Middle Mgmt.	Lt. Commander and Commander	42
3	Lower-Middle Mgmt.	Ensign, Lieutenant (j.g.), and Lieutenant	75
4	Upper-Middle Mgmt.	Warrant Officer (WO1) through Chief Warrant Officer 4th Class (CWO 4)	24
5	Lower-Middle Mgmt.	Chief Petty Officer through Master Chief Petty Officer (E-7 through E-9)	140
6	First-line Supervisor	Petty Officer 3rd Class through Petty Officer 1st Class (E-4 through E-6)	141
		Total Number of Groups	435

RESULTS AND DISCUSSION

DIFFERENCES ACROSS SIX NAVY LEVELS

The first question focused upon the presence or absence of differences across the six Navy organizational levels designated in Table 1. Table 2 presents data for the major indices. Large differences exist across the levels. These differences were found to be highly significant for each of the fifteen indices included in these analyses. There also existed a general consistency in the relative size of scores across the levels. A general decrease was noted with movement from Level One to Level Six. Thus, personnel from higher levels in the Navy reported more favorable policies and practices than did those from lower level.

The exceptions to this pattern were consistent for all the indices. These exceptions took two major forms: (1) Level Three groups (those supervised by Ensigns, Lieutenant j.g.'s and Lieutenants) often had lower scores than the general trend would suggest they should; and (2) Level Four groups (those supervised by Warrant Officers) had higher scores than expected from the general trend. These exceptions provide support for the level classification in Table 1 indicating some overlap between groups supervised by low level Officers, Warrant Officers, and upper-level Enlisted men.

These exceptions to the pattern were expected. Warrant Officers and the groups they supervise are in rather special positions in the Navy. Probably the closest parallel in civilian life are specialists serving as high level advisors on technical matters. Similarly, it was not surprising to find that subordinates of the lowest level Officers reported poorer organizational conditions and practices than some subordinates of upper level Enlisted men. The lowest level Officers almost always have less experience within the Navy and, in many respects, are less potent forces than persons in E-7 through E-9 positions.

Table 3 presents a more detailed look at these data. In this table scores are presented from each item comprising the 15 major indices at each of the six levels. Only two of the 49 items failed to be significantly different across the levels. These two items indicated agreement with respect to the extent to which individuals at all levels reported

Table 2

MEAN SCORES AND ANALYSIS OF VARIANCE STATISTICS FOR
15 MAJOR INDICES AT SIX NAVY ORGANIZATIONAL LEVELS

Index	Level[1] 1	2	3	4	5	6	F	df	p<
Organizational Climate									
Decision-Making Prac.	3.38	2.92	2.83	3.03	2.69	2.36	15.56	5/429	.0001
Communication Flow	3.42	3.26	3.03	3.24	3.08	2.69	13.06	5/429	.0001
Motivational Conds.	3.71	3.42	3.17	3.24	3.01	2.47	28.62	5/425	.0001
Human Res. Primacy	3.00	3.22	2.94	3.20	2.94	2.55	10.61	5/429	.0001
Lower Level Influence	2.77	2.45	2.26	2.40	2.16	1.91	8.79	5/421	.0001
Supervisory Leadership									
Sup. Support	4.50	4.11	4.00	3.89	3.96	3.55	9.16	5/428	.0001
Sup. Goal Emphasis	4.06	3.86	3.65	3.65	3.74	3.36	5.18	5/428	.0001
Sup. Work Facil.	3.46	3.19	2.93	3.20	3.29	2.97	3.96	5/428	.0020
Sup. Team Building	3.99	3.43	3.28	3.33	3.47	3.00	5.90	5/428	.0001
Peer Leadership									
Peer Support	4.29	4.03	3.80	3.78	3.76	3.53	7.30	5/427	.0001
Peer Goal Emphasis	4.03	3.52	3.33	3.21	3.22	2.85	11.22	5/428	.0001
Peer Work Facil.	3.54	3.41	3.13	3.26	3.20	2.88	5.85	5/428	.0001
Peer Team Building	3.74	3.26	3.04	3.18	3.12	2.77	6.71	5/427	.0001
Group Process	4.17	3.84	3.66	3.74	3.65	3.32	11.76	5/428	.0001
Satisfaction	3.79	3.64	3.44	3.67	3.52	3.08	12.04	5/429	.0001
N =	13	42	75	24	140	141			

[1] Levels are as follows: #1 - Captain & Rear Admiral, #2 - Lt. Commander & Commander, #3 - Ensign, Lieutenant (j.g.) & Lieutenant, #4 - Warrant Officers W01 - CW04), #5 - Chief Petty Officers (E-7--E-9), #6 - Petty Officers (E-4--E-6).

Table 3

MEAN SCORES AND ANALYSIS OF VARIANCE STATISTICS FOR
48 ITEMS COMPRISING 15 MAJOR INDICES AT SIX NAVY ORGANIZATIONAL LEVELS

Questionnaire Items	Level[1] 1	2	3	4	5	6	F	df	p<
A 2 - Co Interest in Welf	3.22	3.34	2.97	3.40	3.04	2.52	11.23	5/429	.0001
A 3 - Co Improves Wk Cond	2.86	3.24	2.97	3.10	2.86	2.65	4.90	5/429	.0002
A 4 - Wk Activity Orgnized	2.92	3.06	2.88	3.11	2.92	2.48	7.21	5/429	.0001
A 5 - You Get Oth Unit Inf	2.98	2.96	2.75	3.02	2.74	2.33	8.70	5/429	.0001
A 6 - Sups Open to Ideas	3.88	3.45	3.13	3.40	3.10	2.54	18.14	5/429	.0001
A 7 - Told Enough to do Job	3.39	3.36	3.20	3.30	3.41	3.16	1.99	5/428	n.s.
A 8 - Disagrmts Wked Thru	3.78	3.46	3.14	3.52	3.11	2.84	13.61	5/424	.0001
A 9 - Satis w/ Work Group	4.41	3.96	3.79	3.72	3.95	3.66	3.66	5/429	.0030
A10 - Satis w/ Supervisor	4.41	3.95	3.69	3.78	3.96	3.59	3.87	5/428	.0020
A11 - Satis w/ Job	3.65	3.81	3.61	3.83	3.69	3.06	8.19	5/428	.0001
A12 - Satis w/ Organization	3.35	3.28	3.23	3.61	3.24	2.51	12.19	5/429	.0001
A13 - Satis w/ Pay	3.58	3.68	3.01	3.43	3.01	2.69	9.92	5/427	.0001
A14 - Sat Progress Now	3.62	3.67	3.67	3.72	3.68	3.24	5.01	5/429	.0002
A15 - Sat Future Progress	3.53	3.09	3.11	3.58	3.14	2.81	4.05	5/429	.0020
A16 - Num Motivs to Work	3.95	3.74	3.52	3.27	3.18	3.48	17.41	5/420	.0001
A18 - Conds Encrge Hd Wk	3.45	3.08	2.84	2.90	2.72	2.11	19.52	5/424	.0001
A20 - Infl Levl 1 on Dept	3.09	2.87	2.55	2.72	2.44	2.20	8.92	5/424	.0001
A21 - Infl Empls on Dept	2.45	2.04	1.97	2.08	1.92	1.64	5.90	5/423	.0001
A22 - Objectvs Set Jntly	2.95	2.53	2.59	2.77	2.43	2.14	5.62	5/423	.0001
A23 - Decsn Levls Optimum	3.60	3.27	3.20	3.34	2.98	2.75	8.28	5/427	.0001
A24 - Decsn-Mkrs Seek Ide	3.39	2.86	2.61	2.84	2.56	2.13	14.86	5/429	.0001
A25 - Decsn-Mkrs Get Info	3.61	3.04	2.89	3.16	2.78	2.39	13.09	5/429	.0001
A28 - Now Sup Friendly	4.63	4.26	4.15	3.94	4.05	3.70	7.23	5/428	.0001
A30 - N Sup Pays Attn	4.37	3.98	3.86	3.83	3.91	3.49	6.23	5/427	.0001
A32 - N Sup Will Listen	4.51	4.10	4.00	3.90	3.93	3.47	9.82	5/428	.0001
A34 - N Sup Encg Effort	3.93	3.75	3.64	3.58	3.75	3.27	5.33	5/428	.0001
A36 - N Sup Has Hi Std	4.17	3.96	3.66	3.72	3.74	3.45	4.07	5/428	.0020
A38 - N Sup Shows How Imp	3.31	2.97	2.84	2.95	3.19	2.97	2.03	5/428	n.s.
A40 - N Sup Helps Plan	3.53	3.19	2.92	3.41	3.39	2.93	4.89	5/427	.0002

Table 3 (continued)

Questionnaire Items	Level[1] 1	2	3	4	5	6	F	df	p<
A42 - N Sup Offr New Idea	3.52	3.42	3.03	3.22	3.31	3.02	3.48	5/427	.0050
A44 - N Sup Encourgs Team	3.89	3.38	3.35	3.32	3.56	3.15	3.34	5/428	.0060
A46 - N Sup Enc Idea Exch	4.09	3.49	3.22	3.34	3.38	2.85	8.17	5/428	.0001
A55 - Now Wkgp Friendly	4.50	4.25	3.99	4.04	4.01	3.84	4.17	5/427	.0010
A57 - N Wgp Pay Attn to U	4.23	3.99	3.81	3.83	3.74	3.44	7.44	5/428	.0001
A59 - N Wgp Will Listen	4.15	3.85	3.59	3.47	3.52	3.33	5.34	5/426	.0001
A61 - N Wgp Encourgs Eff	3.77	3.32	3.19	3.09	3.03	2.63	6.78	5/428	.0001
A63 - N Wgp Has Hi Stds	4.24	3.71	3.46	3.34	3.41	3.07	10.20	5/428	.0001
A65 - N Wgp Shows How Imp	3.59	3.39	3.17	3.24	3.24	2.91	4.62	5/428	.0004
A67 - N Wgp Helps Plan	3.17	3.25	3.05	3.13	3.06	2.68	5.09	5/428	.0002
A69 - N Wgp Gives New Ide	3.84	3.58	3.18	3.41	3.28	3.04	5.07	5/428	.0002
A71 - N Wgp Encourgs Tmwk	3.83	3.33	2.99	3.18	3.16	2.88	4.77	5/428	.0003
A73 - N Wgp Emph Tm Goals	3.40	3.04	2.97	3.06	2.94	2.56	5.25	5/427	.0001
A75 - Wkgp Plans, Coords	3.87	3.41	3.17	3.29	3.26	2.87	7.00	5/427	.0001
A76 - Wkgp Makes Good Dec	4.13	3.72	3.59	3.72	3.55	3.30	6.61	5/427	.0001
A77 - Wkgp Mbrs Know Jobs	4.00	3.74	3.63	3.78	3.77	3.43	4.96	5/427	.0002
A78 - Wkgp Mbrs Inform Ea	4.05	3.70	3.56	3.67	3.49	3.28	4.81	5/427	.0003
A79 - Gp Wants Meet Objec	4.43	4.09	3.72	3.85	3.72	3.15	17.88	5/427	.0001
A80 - Wkgp Adaptable	4.34	4.19	4.05	4.11	3.92	3.64	7.02	5/427	.0001
N =	13	42	75	24	140	141			

[1] Levels are as follows: #1 - Captain & Rear Admiral, #2 - Lt. Commander & Commander, #3 - Ensign, Lieutenant (j.g.) & Lieutenant, #4 - Warrant Officers (W01-CW04), #5 - Chief Petty Officers (E-7 - E-9), #6 - Petty Officers (E-4 - E-6).

information flowing in a downward direction, and the extent to which supervisors showed subordinates how to improve their performance.

The pattern for high and low scores remained very much like that described for the indices. In 46 of the 49 items Level Six groups supervised by E-4 through E-6 personnel (Petty Officers 1st, 2nd and 3rd Class) reported the lowest scores. In two of the remaining three items the lowest scores were reported by groups supervised by the lowest level Officers (Ensigns, Lieutenant j.g.'s, and Lieutenants). These two items suggest a substantial weakness at this level in the extent to which supervisors help their subordinates improve their performance and schedule work in advance.

In 38 of the 49 items the highest scores were reported by persons in groups supervised by Level One personnel (Captains and Rear Admirals). Of the 11 remaining items, seven received highest scores from groups supervised by Warrant Officers (WO 1 through CWO 4). Four of these items indicated that members of groups at this level were the most satisfied of the six levels with respect to their jobs; the unit with which they worked; their progress to date; and, their chances for future advancements.

The data presented in Tables 2 and 3 present an unequivocal answer to our first question regarding the existence of differences in organizational policies and practices across six organizational levels. Large differences were reported for almost every indicator. These data further indicated that the best conditions and practices were generally reported by the groups supervised by top level Officers and the worst were reported by subordinates of the E-4 through E-6 level supervisors. Further, there were indications that groups supervised by Warrant Officers reported generally good conditions and practices while those supervised by Ensign, Lieutenant j.g.'s, and Lieutenants reported scores in the low range.

BY-LEVEL COMPARISONS WITH CIVILIAN NORMS

Although groups which were organizationally higher in the Navy command hierarchy generally reported better practices and conditions than those at lower levels, this was expected since data from civilian organizations on these measures have consistently shown this trend. A comparison of the six Navy levels with civilian norms for various levels would be valuable in providing indications of Navy functioning judged against approximately equivalent civilian standards. For these comparisons we have focused upon the 15 major indices described in the "Methods" section of this report. Figures 1 through 6 present these comparisons for each of the six levels. The civilian equivalent levels used for these comparisons were presented in Table 1. The data plotted in these figures is presented in Table 2.

As noted in a previous report (Bowers & Franklin, 1973), scores falling within the 40th to 60th percentile range were judged about normal. In the following discussion the focus is on those scores below the 40th and above the 60th percentiles.

Level One -- Groups Supervised by Captains and Rear Admirals

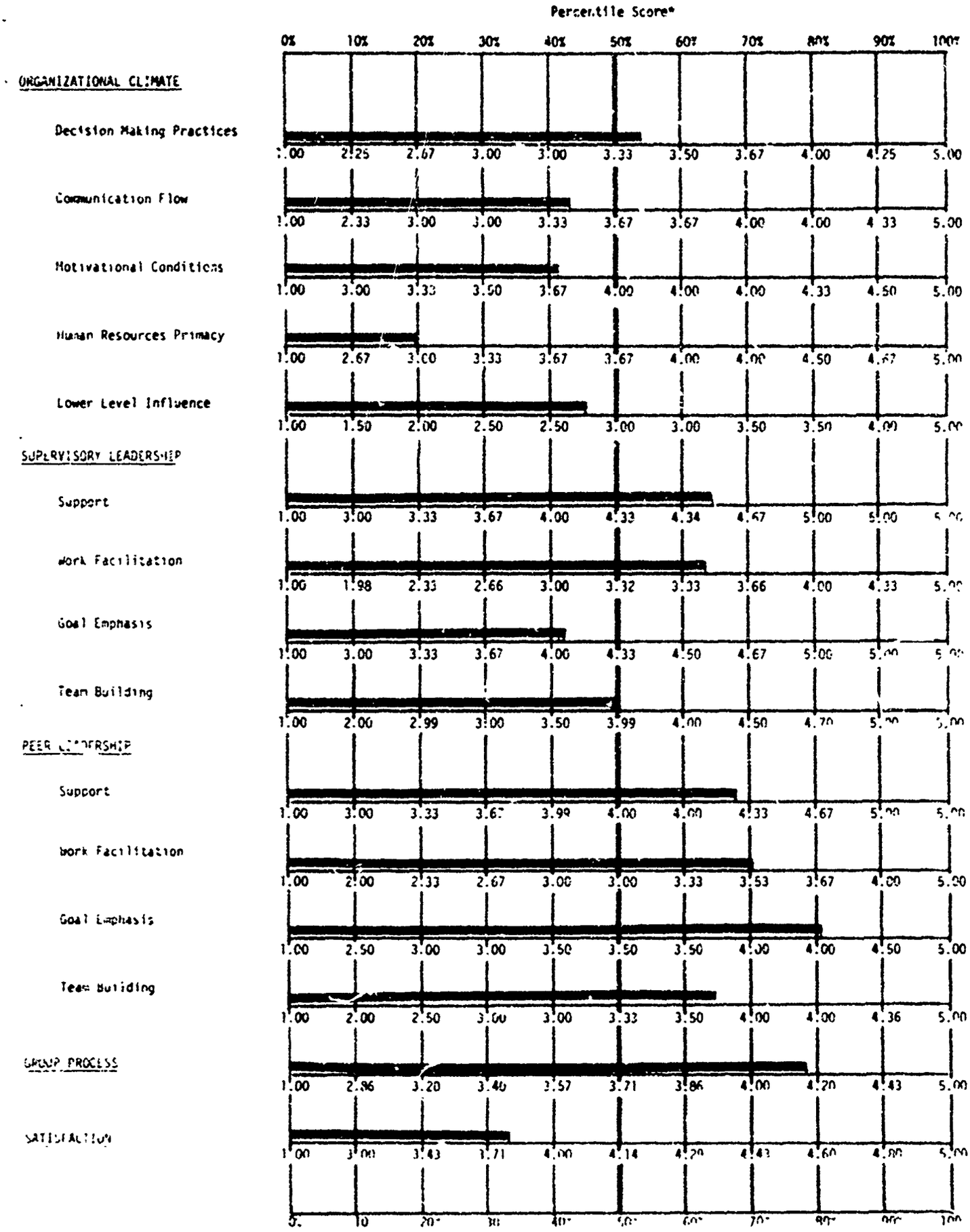
Data from the Level One groups (see Figure 1) indicated that four of the five Organizational Climate indices were within the designated normal range. The single exception was the Human Resources Primacy index which reached only the 20th percentile. This score indicated that when compared with civilians at equivalent organizational levels, Navy personnel at this level reported that the Navy was less concerned with (1) improving working conditions; (2) the welfare of organizational members; and, (3) organizing work in a sensible manner.

The Supervisory Leadership indices indicated a slightly better than average level of leadership. Two indices--Supervisory Goal Emphasis, and Supervisory Team Building--fell within the normal range, and the remaining two--Supervisory Support and Supervisory Work Facilitation--were slightly above the 60th percentile.

The Peer Leadership indices were all above the normal range indicating that the subordinates of Rear Admirals and Captains did a good job of providing leadership to each other. The Group Process index further supported this picture. Group Processes are largely the result of Peer

Figure 1

MAJOR INDICES FOR GROUPS SUPERVISED BY CAPTAINS AND REAR ADMIRALS
COMPARED WITH CIVILIAN NORMS FOR GROUPS SUPERVISED BY TOP MANAGEMENT



*Percentile scores indicate the percentage of cases from the civilian data that are below the given score.

Leadership behaviors, and to a lesser extent, Organizational Climate. In the present instance we observed that the average scores on Organizational Climate together with the above average scores for Supervisory Leadership resulted in good levels of Group Process behaviors--about the 75th percentile on the civilian norms.

Scores on the Satisfaction index presented quite a different picture. This index tapped satisfaction with seven aspects of organizational policies and practices. The individual items comprising the index revealed a mixed reaction to these facets of organizational functioning. Two items suggested that satisfaction with supervisors and pay were about average for persons at these levels. The previously discussed measures of Supervisory Leadership behaviors suggested that this reaction was about what would be expected. The measures of Peer Leadership and Group Process were generally average or above average and the item regarding satisfaction with other group members reflected this reaching a level between the 60th and 70th percentiles.

The remaining four aspects of satisfaction all fell below the 40th percentile. Of these, the expressed satisfaction with the unit--ship or shore station--to which personnel at this level were assigned was the lowest (15th percentile); and satisfaction with the job (19th percentile), with present progress in the organization (27th percentile), and with chances for future progress (38th percentile) followed in order.

Level Two -- Groups Supervised by Lt. Commanders and Commanders

The data for Level Two groups are illustrated in Figure 2. Three Organizational Climate indices were within the 40th to 60th percentile range The remaining two fell just slightly below the 40th percentile. Overall, there were no outstanding strengths or weaknesses in Organizational Climate for these groups.

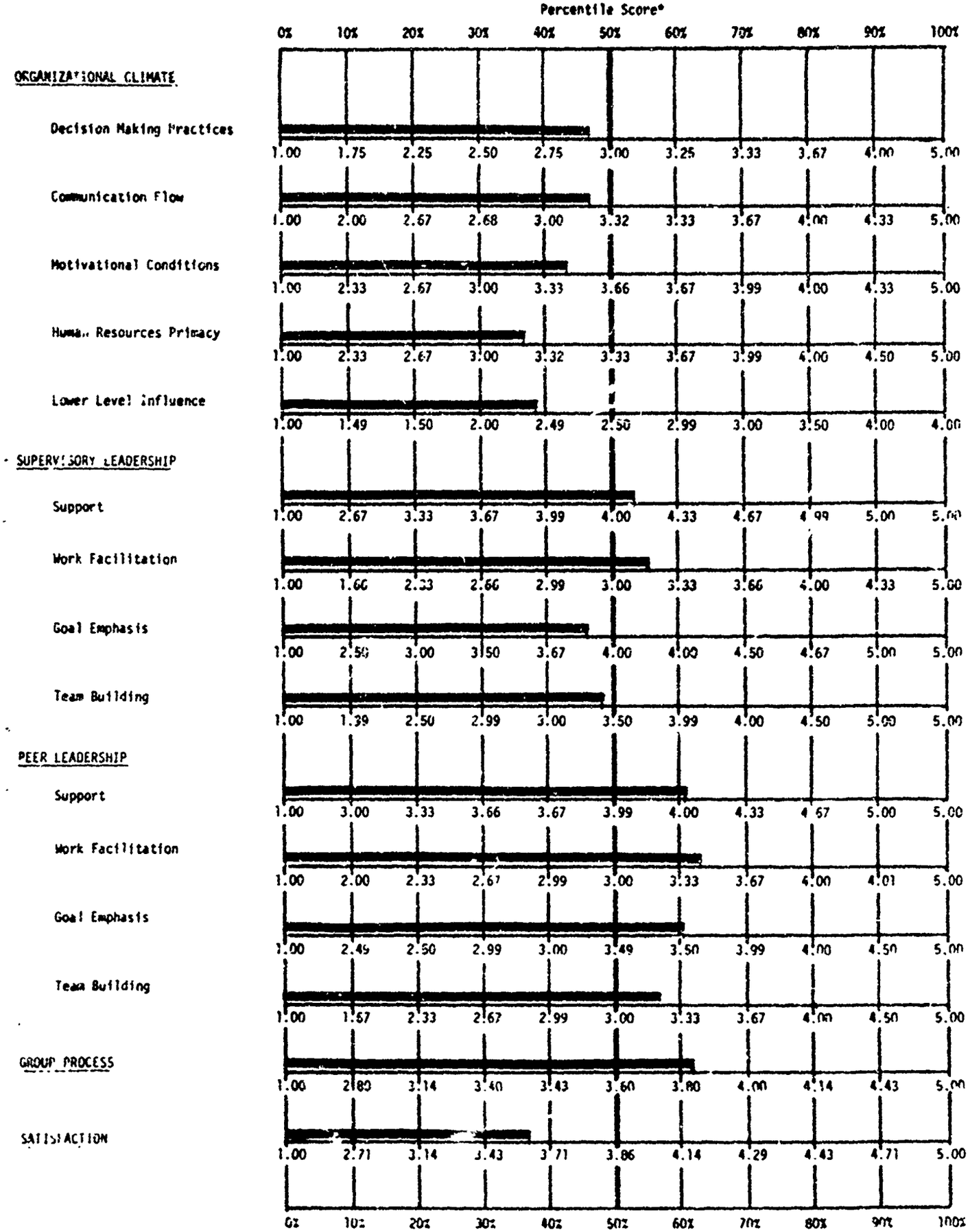
All the Supervisory Leadership indices fell within the normal range also indicating a lack of notable strength or weakness.

Scores on the Peer Leadership indices indicated this was an area of moderate strength. Three of the four indices fell slightly above the 60th percentile.

The Group Process index score suggested a moderately good level of

Figure 2

MAJOR INDICES FOR GROUPS SUPERVISED BY LT. COMMANDERS AND COMMANDERS
COMPARED WITH CIVILIAN NORMS FOR GROUPS SUPERVISED BY UPPER-MIDDLE MANAGEMENT



*Percentile scores indicate the percent of cases from the civilian data that are below the designated score.

functioning but not as good as indicated by the data from Level One groups. The Satisfaction index was slightly low. Individual items indicated the least satisfaction with the unit with which group members were a part.

Level Three -- Groups Supervised by Ensigns, Lieutenant j.g.'s and Lieutenants

The data from the Level Three groups (see Figure 3) presented a somewhat less positive picture than that of the previously noted levels. Two of the Organizational Climate indices deviated from the normal range. Both of these--Human Resourves Primacy and Motivational Conditions--were below the 40th percentile. The lowest item from these indices suggested that people, policies, or conditions at this level did not encourage hard work.

Two of the Supervisory Leadership indices--Supervisory Support, Supervisory Team Building--were within the normal range, but two others--Work Facilitation, Goal Emphasis--were slightly lower. These low scores indicated a somewhat less than average level of task emphasis by supervisors at this level.

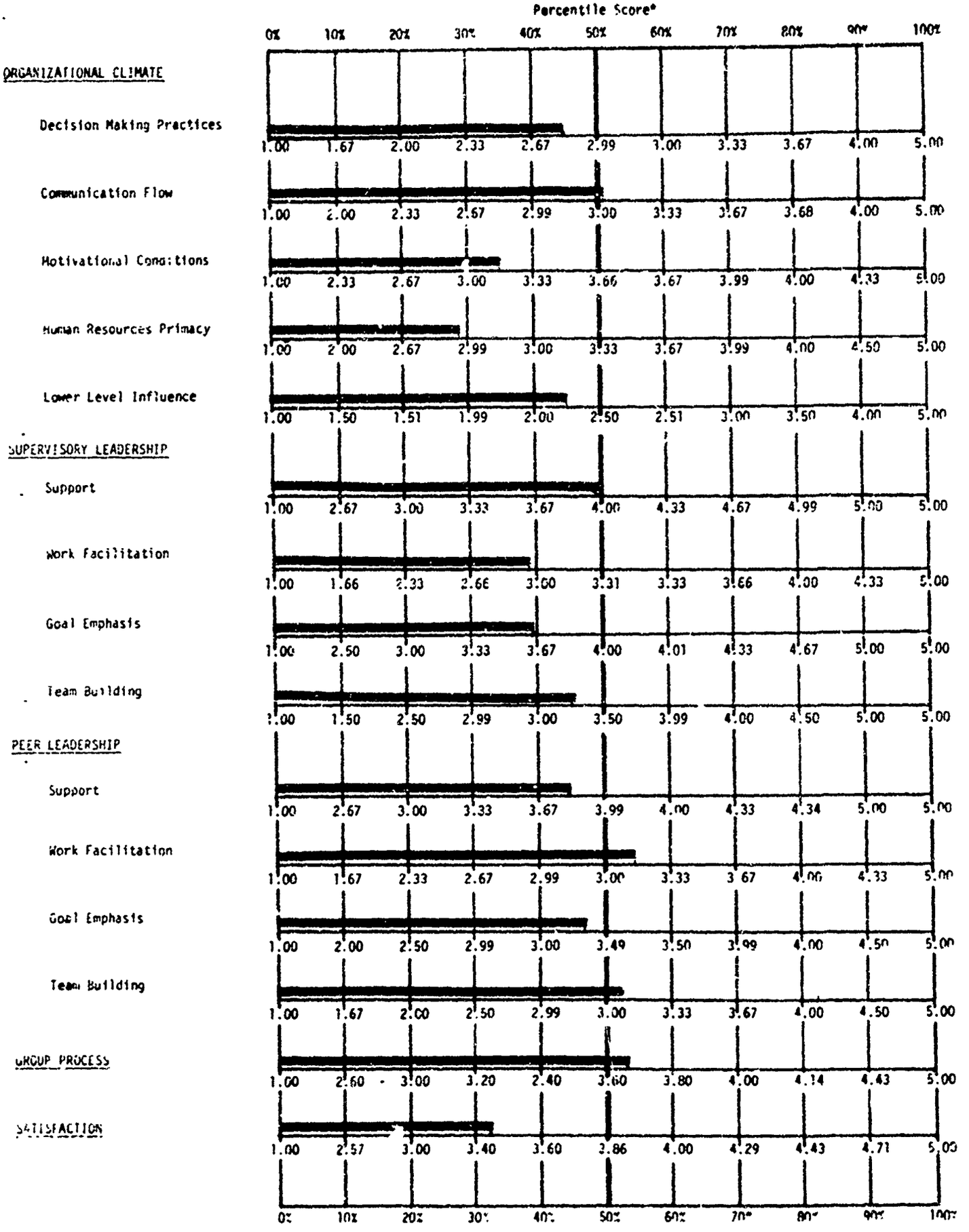
All four Peer Leadership indices fell within the normal range. No significant strengths or weaknesses were indicated.

As might be anticipated from the scores on the Organizational Climate and Peer Leadership indices, the indications of group processes suggest near normal levels of functioning. However, it is interesting to note that the lowest percentile score on the items comprising the Group Process index indicated a less than average desire on the part of group members to meet task objectices. This may be a result of the lack of task emphasis on the part of supervisors of these groups.

As was the case in the two previously discussed levels, the overall Satisfaction index was somewhat below the normal range. In the groups at this level we found about average satisfaction with progress to date and the chances for future progress. However, the remaining five satisfaction items fell below the 40th percentile on the civilian norms. Two of these were especially notable. The lowest expressed satisfaction (17th percentile) is with the unit. The second lowest item (26th percentile)

Figure 3

MAJOR INDICES FOR GROUPS SUPERVISED BY ENSIGNS AND LIEUTENANTS
COMPARED WITH CIVILIAN NORMS FOR GROUPS SUPERVISED BY LOWER-MIDDLE MANAGEMENT



*Percentile scores indicate the percent of cases from the civilian data that are below the designated score.

refers to the jobs held by members of these groups. These have been the lowest two satisfaction items throughout the three Officer levels.

Level Four -- Groups Supervised by Warrant Officers (WO 1 through CWO 4)

In evaluating the data for groups supervised by Warrant Officers (see Figure 4) it should be remembered that groups in this category are somewhat special being not clearly a part of either the Officer or Enlisted hierarchy of command. Based upon the types of jobs done by members of these groups and the relative position on the data presented in Table 1, civilian data from groups supervised by Upper-Middle managers has been used for comparative purposes.

Two of the Organizational Climate indices fell within the normal range and the remaining three were between the 30th and 40th percentiles. Two of the lowest items from one of these low indices--Motivational Conditions--indicated that groups supervised by persons at this level did not feel that people, policies, and conditions encouraged hard work or that the general motivators of behavior are those indicative of effective organizational functioning.

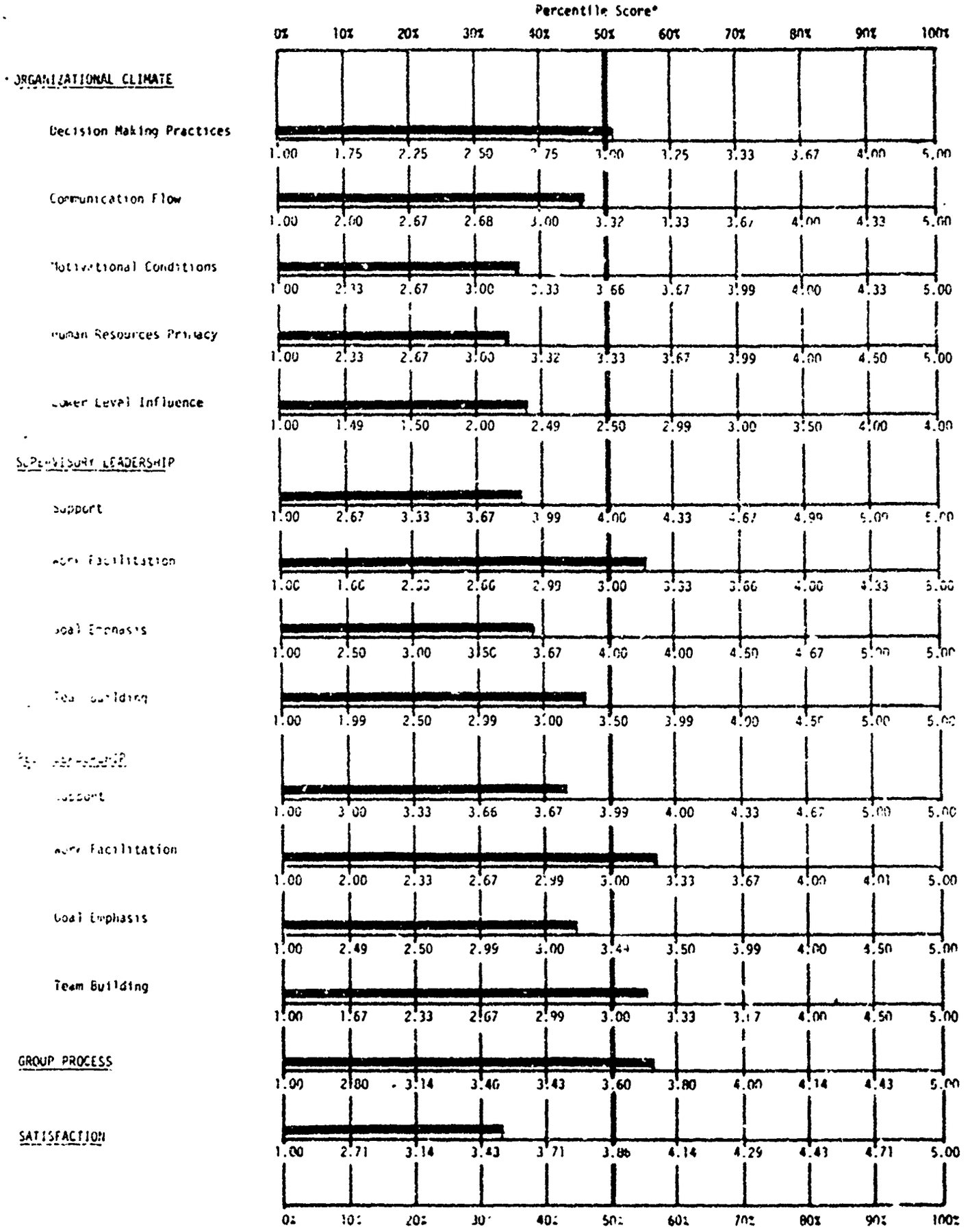
The Supervisory Leadership indices suggested an average to low level of leadership behaviors. Two indices--Supervisory Work Facilitation, Supervisory Team Building--were within the normal range, and two--Supervisory Support, Supervisory Goal Emphasis--fell just below the 40th percentile. A perusal of individual items did not reveal specific areas of strength or weakness.

A similar picture resulted from an examination of the Peer Leadership and Group Process indices. All four Peer Leadership indices and the Group Process index all fell within the normal range.

Once again, however, the Satisfaction index was below the 40th percentile. At this level scores on three of the items--satisfaction with pay, present progress, and future progress--were between the 40th and 60th percentiles. The two lowest items--satisfaction with work group members and unit--fell slightly below the 30th percentile.

Figure 4

MAJOR INDICES FOR GROUPS SUPERVISED BY WARRANT OFFICERS
COMPARED WITH CIVILIAN NORMS FOR GROUPS SUPERVISED BY UPPER-MIDDLE MANAGEMENT



*Percentile scores indicate the percent of cases from the civilian data that are below the designated score.

Level Five -- Subordinates of Chief Petty Officers Through Master Chief Petty Officers (E-7 through E-9)

The Organizational Climate data for groups supervised by E-7's through E-9's (see Figure 5) indicated that three of the five areas were within the normal range and two fell below this range. Once again the lowest indices were Human Resource Primacy and Motivational Conditions. The three lowest individual items from these indices suggested that (1) people, policies, and conditions did not encourage hard work; (2) the Navy or specific duty station or ship was not viewed as attempting to improve working conditions; and (3) the reasons people worked hard were not those related to effective organizational functioning.

All eight indices in the Supervisory and Peer Leadership areas were within the 40th to 60th percentiles. The individual items from these indices revealed no notable strengths or weaknesses.

The Group Process score also fell within the normal range. Only one of the seven items from this index was outside this range. This item indicated that group members had a somewhat less than average desire to meet group objectives.

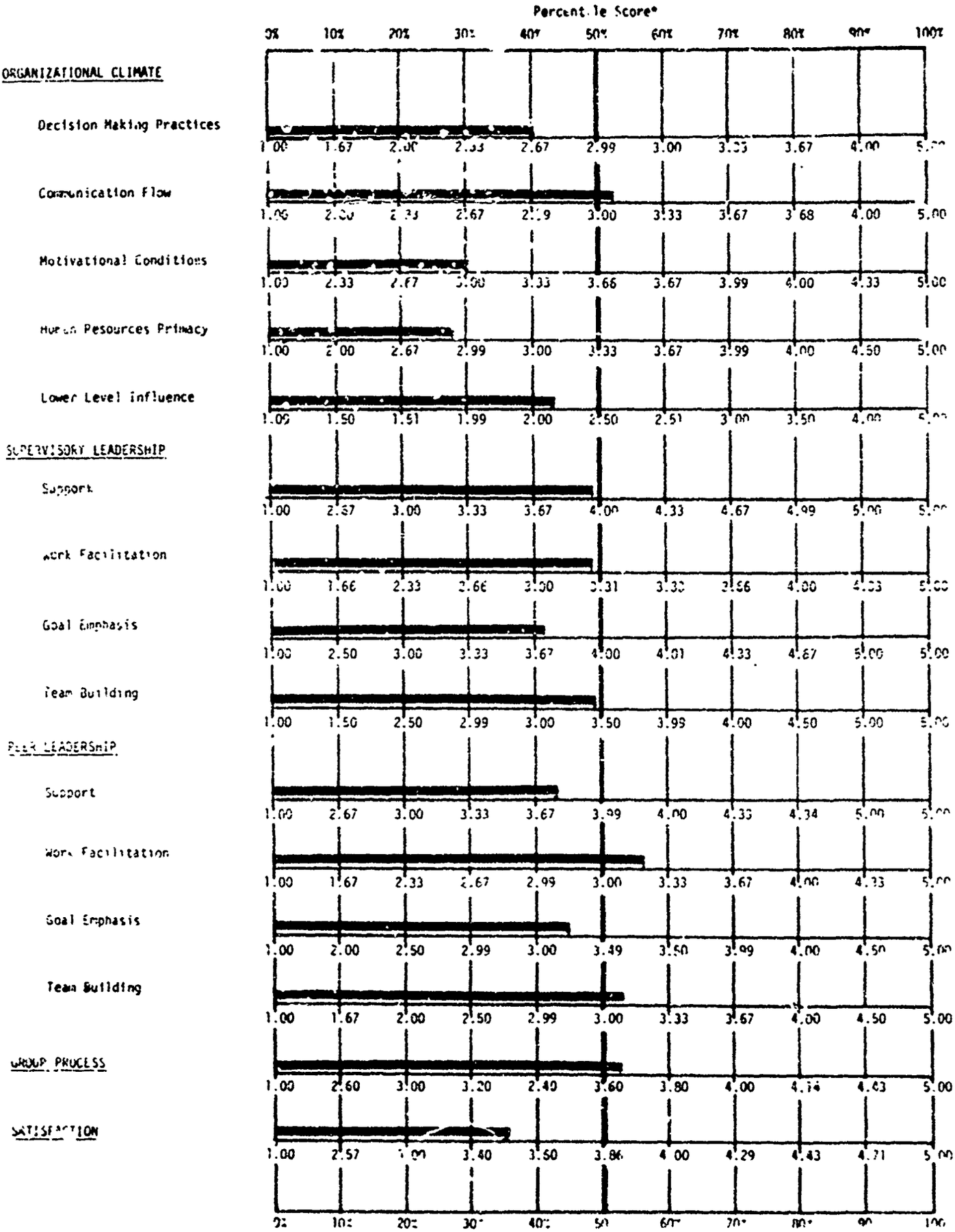
The overall Satisfaction index for the groups at this level was just below the 40th percentile. The three low items in this index indicated strong dissatisfaction with the unit (17th percentile); and middle levels of dissatisfaction with the job (28th percentile) and amount of pay (38th percentile).

Level Six -- Subordinates of Petty Officers 3rd Class, 2nd Class, 1st Class (E-4 through E-6)

The data from groups led by First- through Third-class Petty Officers is illustrated in Figure 6. Two of the five Organizational Climate indices were within the normal range and three fell below the 40th percentile. The low indices were Motivational Conditions, Lower Level Influence, and Human Resources Primacy. The lowest individual item from these indices indicated that members of groups at this level did not see people, policies, or conditions as encouraging of hard work (22nd percentile). Six other items comprising the Climate indices fell below the 40th percentile, however, all were close to the 40th percentile on the civilian norms. The lack of motivation to work hard emerged as the single most striking weakness in

Figure 5

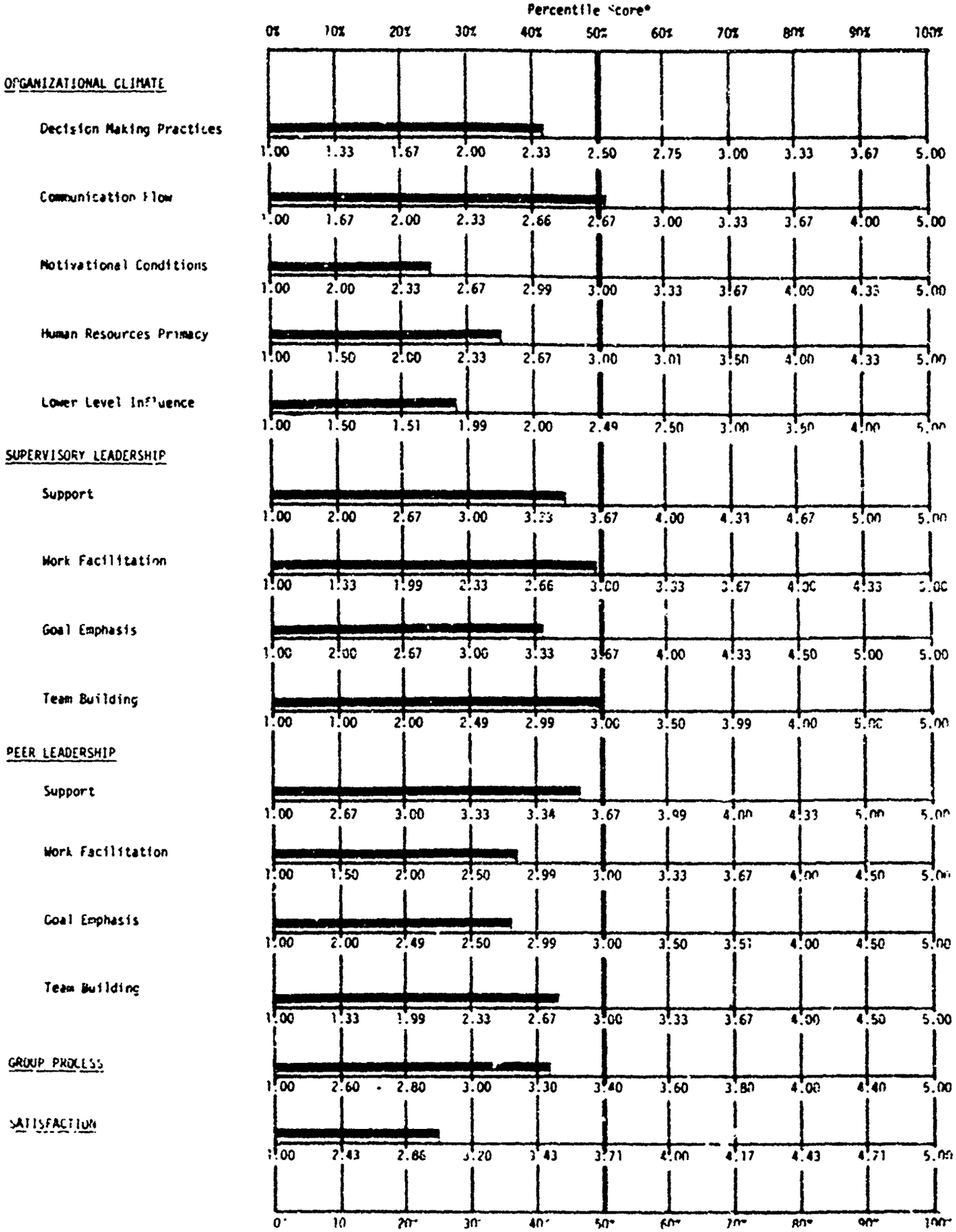
MAJOR INDICES FOR GROUPS SUPERVISED BY CHIEF PETTY OFFICERS
COMPARED WITH CIVILIAN NORMS FOR GROUPS SUPERVISED BY LOWER-MIDDLE MANAGEMENT



*Percentile scores indicate the percent of cases from the civilian data that are below the designated score.

Figure 6

MAJOR INDICES FOR GROUPS SUPERVISED BY PETTY OFFICERS
COMPARED WITH CIVILIAN NORMS FOR GROUPS SUPERVISED BY FIRST-LINE BLUE COLLAR MANAGEMENT



*Percentile scores indicate the percent of cases from the civilian data that are below the designated score

organizational practices and conditions reported at this level.

All four Supervisory Leadership indices fell within the normal range, but three individual items fell below the lower limit of this range. One of these indicated that superiors at this level did not pay attention to what subordinates had to say. The other two indicated a below average emphasis by the supervisor upon giving one's best effort to accomplish the task, and a lower than average maintenance of high standards in task performance.

The Peer Leadership indices were somewhat lower than Managerial Leadership. Two of these fell within the normal range -- Peer Support, Peer Team Building -- and two -- Peer Work Facilitation, Peer Goal Emphasis -- were slightly lower. All except three items from these indices were in the normal range. The three low items paralleled those noted above for Supervisory Leadership. They indicated (1) peers at this level payed less than average attention to what others in their groups had to say; (2) members of the work groups did not encourage each other to give their best efforts; and (3) work group members did not maintain high standards of performance.

The overall Group Process index for groups at this level was just above the 40th percentile, but four of the six items fell below the normal range. These items indicated a below average extent to which (1) group members knew their jobs (25th percentile); (2) group members wanted to meet their objectives (33rd percentile); work group members readily adapted to unusual situations and demands; and (3) the group members planned and coordinated their efforts well.

As was found in each of the previous levels, the Satisfaction index at this level was below the 40th percentile. Five of the seven individual items were below this level. The lowest one again indicated considerable dissatisfaction with the unit (16th percentile). Two of the remaining low items suggested considerable dissatisfaction with the job (24th percentile) and the work groups (25th percentile).

AN OVERVIEW OF THE SIX NAVY LEVELS COMPARED WITH CIVILIAN NORMS

The second major question stated at the beginning of this report considered the relative strength of organizational conditions and practices within various levels of the Navy when compared with appropriate levels in civilian organizations. The data presented in this section demonstrated a striking consistency in the relative strengths and weaknesses suggested by these items and indices across the six Navy levels. The five Organizational Climate indices were very similar in their pattern at all levels. In all six levels the Human Resources Primacy index score was below the normal range, and in five of these levels it was the single lowest Organizational Climate index. These scores provided a strong indication that the importance attributed to people at all levels in the Navy was an important block to effective functioning.

The second major area of concern within Organizational Climate was Motivational Conditions. In four of the six levels -- all except Levels One and Two -- the score for this index fell below the normal range. Of special concern was the extent to which people, policies, and conditions were reported as failing to provide motivation for persons to give their best efforts. This was the lowest area in each of the four levels where the Motivational Conditions index was below the norm.

One additional Organizational Climate index -- Lower Level Influence -- fell below the normal range at three levels. This index suggested that there was a slight tendency for first- and especially second-line supervisory personnel to have lower than average levels of influence in their units.

Scores on the four Supervisory Leadership and four Peer Leadership indices revealed few areas of consistent strength or weakness, although at Levels One and Two the Peer Leadership indices were generally above the normal range. If there existed a cause for concern in these areas, it was with the tendency for those indices which were low to be of a task related nature. At Level Three both the Supervisory Work Facilitation and Supervisory Goal Emphasis indices fell below the normal range. At Level Four the Supervisory Goal Emphasis index was also below the 40th

percentile. In addition, the only low scores on the Peer Leadership indices were reported by Level Six groups which indicated weaknesses in Peer Work Facilitation and Peer Goal Emphasis. All of these were task related indices.

Indications of the slight weakness on the task dimensions noted in the leadership indices and the lack of motivation to perform at maximum capacities noted in the Organizational Climate scores received additional confirmation from the Group Process items. Although the Group Process index scores were all within or above the normal range, one item fell below this range in three of the six levels. Scores on this single item suggested a weakness in the extent to which group members cared about accomplishing their objectives.

A further consistency with respect to the scores across the six levels emerged within the Satisfaction index. This index failed to reach the lower limit of the normal range at any of the levels. A single item from this index -- satisfaction with unit -- indicated that the greatest dissatisfaction at all levels when compared with the civilian norms was with the ship or duty station. Navy personnel, regardless of their supervisors rank, expressed much less satisfaction than civilians at equivalent organizational levels with the place they work. It was impossible from these data to learn what all the causes of this apparent dissatisfaction were, but, the conditions related to the low scores on the Human Resources Primacy and Motivational Conditions indices must certainly be prime factors.

A second area of major dissatisfaction was with the jobs themselves. Again, the scores were comparatively low for this facet of the work environment at all six levels. A third area of widespread dissatisfaction -- four of the six levels -- was with other members of the work groups.

A notable aspect of the Satisfaction index was that at only two levels -- Levels Three and Five -- was there expressed a satisfaction with pay that was below the normative level. In both of these cases the scores for the item indicating satisfaction with pay fell just under the 40th percentile. Thus, the level of pay did not seem to be a cause of great concern.

Overall, these results tended to support many of the findings previously reported by Bowers and Franklin (1973). The previous report noted rather extreme differences when ship and shore units were examined separately and when different ship types were compared with each other. In this study large differences were also found across six organizational levels within the Navy, however, when compared with norms from equivalent civilian levels we found the pattern of high and low scores was extremely consistent across all six levels. Thus, the differences across levels, although large, may not have been as important as the consistent strengths and weakness pervading all or most levels. The pervading weaknesses in Navy functioning were evident in several areas including: (1) the lack of concern for human resources as a vital part of the organization; (2) the absence of motivators which induce organizational members to work hard; (3) a lack of task emphasis in leadership behaviors; and, (4) relatively low levels of satisfaction with the p[illegible] personnel were assigned to work, the jobs themselves, and other members of work groups.

RELATIVE EFFECTS OF LEVEL AND AGE

In the report by Bowers and Franklin (1973), it was noted that age appeared as a moderator of the differences found between the ship and shore-based samples. In the previous section of this report it was also noted that large differences existed across organizational levels in the Navy. Since, as is evident from the data in Table 4, a positive relationship ($r = .22$; $n = 443$; $p<.01$) existed between ages of subordinates and the rank of supervisor there was the possibility that a significant part of the cross-level differences represented nothing more than age differences at the various levels. To better understand these possibilities we have attempted to identify the relative effects of age controlling for organizational level, and the effects of level controlling for the effects of age.

The Multiple Classification Analysis program (Andrews, Morgan, and Sonquist, 1967) was used to obtain the necessary statistics. This program requires only nominal level measurement in the predictor variables thus allowing the use of the six level classifications for such analyses. The program yields "statistics (which) show how each predictor relates to

Table 4

DISTRIBUTION OF AGE OF SUBORDINATES
WITH SUPERVISORS' RANKS

Supervisors' Rank[1]	Average Subordinate Age					
	17-21	21-23	23-27	27-31	31-36	36-52
1	--	--	--	1	2	10
2	--	1	4	13	12	11
3	4	2	9	16	23	21
4	1	1	--	5	4	13
5	8	15	41	31	27	16
6	47	56	25	9	1	2

[1] Ranks are as follows: #1 - Captain & Rear Admiral, #2 - Lt. Commander & Commander, #3 - Ensign, Lieutenant (j.g.) & Lieutenant, #4 - Warrant Officers (WO1-CWO4), #5 - Chief Petty Officers (E-7--E-9), #6 - Petty Officers (E-4--E-6).

the dependent variable, both before and after adjusting for the effects of other predictors" (p. 8). Two basic statistics yielded by the program were of special interest in this investigation:

Eta (η) -- "...the correlation ratio ...indicates the ability of the predictor, using the categories given, to explain variation in the dependent variable. Eta^2 indicates the proportion of the total sum of squares explainable by the predictor" (p. 22).

Beta (β) -- "...provides a measure of the ability of the predictor to explain variation in the dependent variable after adjusting for the effects of all other predictors" (p. 22).

A large difference between the eta and beta scores for the relationship between a particular predictor and the dependent variable indicates that the influence of other predictors which have been controlled in computing the beta is great. For example, if age and organizational level were used as predictors to one of the indices measuring organizational policies or practices and it was found that the correlation ratio (eta) for the relationship between level and the dependent variable was .14, but the beta statistic -- controlling for the effects of age -- was only .04 this would be considered evidence that age was an important moderator of the effect of level upon the dependent variable.

In addition to an evaluation of the difference in eta and beta scores it is possible to test for the significance of each statistic.[1] Thus, it may be that even with the drop from the eta to the beta in the above example, the beta may still account for a significant amount of the variance indicating that the effects of level alone were of importance.

Effects Of Level Controlling For Age

Table 5 presents the basic statistics which provide the test of differences across the six organizational levels with and without controlling for the effects of age. The eta statistics provide essentially the same information as the F-statistics in Table 2. Ignoring the effects of other variables, there were significant differences across the six Navy levels for each of the 15 indices. The adjusted means and beta statistics indicate

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[1] The formulas for these computations are provided by Andrews, Morgan, and Sonquist (1967, pp. 99-100).

Table 5

MAJOR INDICES AT SIX ORGANIZATIONAL LEVELS:
UNADJUSTED AND ADJUSTED MEANS FOR AGE; ETA AND BETA STATISTICS

Index		Organizational Level[1] 1	2	3	4	5	6	Eta	Beta
Organizational Climate									
Decision-Making Prac.	Unadj.	3.38	2.89	2.83	3.03	2.68	2.36	.39**	
	Adj.	*3.14*	*2.80*	*2.74*	*2.87*	*2.68*	*2.48*		.23**
Communication Flow	Unadj.	3.42	3.23	3.03	3.24	3.08	2.68	.36**	
	Adj.	*3.30*	*3.16*	*2.96*	*3.17*	*3.06*	*2.77*		.25**
Motivational Conds.	Unadj.	3.71	3.40	3.17	3 24	3.01	2.46	.50**	
	Adj.	*3.33*	*3.23*	*3.01*	*2.99*	*3.00*	*2.68*		.27**
Human Res. Primacy	Unadj.	3.00	3.18	2.94	3.20	2.96	2.55	.34**	
	Adj.	*2.70*	*3.07*	*2.83*	*3.01*	*2.98*	*2.71*		.19**
Lower Level Influence	Unadj.	2.77	2.43	2.26	2.40	2.16	1.9[illegible]	.30**	
	Adj.	*2.51*	*2.33*	*2.16*	*2.23*	*2.16*	*2.06*		.15
Supervisory Leadership									
Sup. Support	Unadj.	4.50	4.09	4.00	3.89	3.97	3.55	.31**	
	Adj.	*4.25*	*3.99*	*3.92*	*3.72*	*3.96*	*3.68*		.19**
Sup. Goal Emphasis	Unadj.	4.06	3.83	3.65	3.65	3.75	3.35	.24**	
	Adj.	*3.86*	*3.83*	*3.63*	*3.54*	*3.77*	*3.38*		.22**
Sup. Work Facil.	Unadj.	3.46	3.17	2.93	3.20	3.30	2.97	.21**	
	Adj.	*3.31*	*3.15*	*2.91*	*3.10*	*3.32*	*3.00*		.20**
Sup. Team Building	Unadj.	3.99	3.40	3.28	3.33	3.48	3.00	.26**	
	Adj.	*3.69*	*3.30*	*3.19*	*3.14*	*3.49*	*3.13*		.19**

Table 5 (continued)

Index		Organizational Level[1] 1	2	3	4	5	6	Eta	Beta
Peer Leadership									
Peer Support	Unadj.	4.29	4.01	3.80	3.78	3.76	3.54	.27**	
	Adj.	*4.24*	*3.96*	*3.76*	*3.74*	*3.74*	*3.59*		*.22***
Peer Goal Emphasis	Unadj.	4.03	3.48	3.33	3.21	3.22	2.85	.34**	
	Adj.	*3.79*	*3.37*	*3.23*	*3.06*	*3.19*	*3.02*		*.20***
Peer Work Facil.	Unadj.	3.54	3.37	3.13	3.26	3.20	2.88	.25**	
	Adj.	*3.39*	*3.30*	*3.06*	*3.17*	*3.19*	*2.97*		*.16**
Peer Team Building	Unadj.	3.74	3.22	3.04	3.18	3.11	2.77	.26**	
	Adj.	*3.50*	*3.12*	*2.94*	*3.03*	*3.10*	*2.91*		*.16**
Group Process	Unadj.	4.17	3.81	3.66	3.74	3.65	3.32	.34**	
	Adj.	*4.03*	*3.75*	*3.60*	*3.66*	*3.63*	*3.41*		*.23***
Satisfaction	Unadj.	3.79	3.61	3.44	3.67	3.54	3.07	.36**	
	Adj.	*3.52*	*3.54*	*3.37*	*3.50*	*3.55*	*3.18*		*.25***

* $p < .05$; ** $p < .01$

[1] Levels are as follows: #1 - Captain & Rear Admiral, #2 - Lt. Commander & Commander, #3 - Ensign, Lieutenant (j.g.) & Lieutenant, #4 - Warrant Officers (WO1-CWO4), #5 - Chief Petty Officers (E-7--E-9), #6 - Petty Officers (E-4--E-6).

the effects of levels controlling for age. In all 15 indices the beta statistic were less than the eta score. However, it was of note that, with only one exception, the beta remained significant beyond the .05 level of confidence even after controlling for age. In the one exception -- Lower Level Influence -- the beta score just missed this level. These data indicated that even controlling for the effects of age differences, organizational level within the Navy alone accounted for a significant portion of the variance in these measures of organizational policies and practices.

There were differences, however, in the extent to which age acted upon the level differences as a moderator. For example, in the five Organizational Climate indices an average drop of 15.2 points were found from the eta to the beta scores, while the four Supervisory Leadership indices dropped an average of only 5.5 points. The Motivational Conditions index demonstrated the largest drop (.23) of the indices and the Supervisory Work Facilitation and Supervisory Goal Emphasis indices dropped the least (.01 and .02). It should be noted, however, that the size of the eta for Motivational Conditions was the largest of the 15 indices and the etas for Supervisory Work Facilitation and Supervisory Goal Emphasis were the smallest.

Effects of Age Controlling For Level

Differences across six age classifications were also examined to further explore the combined and unique effects of age and level upon these organizational policies and practices. The statistics for the age category comparisons including adjustments for the effects of organizational level appear in Table 6. In 14 of the 15 indices significant differences were found in unadjusted mean scores across the six age categories. The sole exception was the Supervisory Work Facilitation index. The beta scores indicated that even controlling for the effects of level, age predicted a significant portion of the variance in 13 of the remaining 14 indices. The only exception was for Peer Support where the effects of age controlling for level was almost completely eliminated.

Table 6

MAJOR INDICES FOR SIX AGE CLASSIFICATIONS:
UNADJUSTED AND ADJUSTED MEANS FOR ORGANIZATIONAL LEVEL; ETA AND BETA STATISTICS

Index		Average Age of Group Members 17-21	21-23	23-27	27-31	31-36	36-52	Eta	Beta
Organizational Climate									
Decision-Making Prac.	Unadj.	2.44	2.33	2.58	2.68	2.82	3.11	.40**	
	Adj.	*2.57*	*2.46*	*2.61*	*2.64*	*2.74*	*2.96*		*.25***
Communication Flow	Unadj.	2.65	2.76	2.98	3.00	3.19	3.21	.33**	
	Adj.	*2.79*	*2.88*	*2.99*	*2.94*	*3.11*	*3.09*		*.18***
Motivational Conds.	Unadj.	2.60	2.39	2.80	2.97	3.30	3.51	.54**	
	Adj.	*2.78*	*2.55*	*2.82*	*2.90*	*3.18*	*3.37*		*.38***
Human Res. Primacy	Unadj.	2.59	2.53	2.82	2.89	3.02	3.27	.36**	
	Adj.	*2.70*	*2.62*	*2.81*	*2.83*	*2.96*	*3.22*		*.28***
Lower Level Influence	Unadj.	1.87	1.91	2.10	2.16	2.31	2.56	.34**	
	Adj.	*1.95*	*1.98*	*2.12*	*2.13*	*2.27*	*2.47*		*.25***
Supervisory Leadership									
Sup. Support	Unadj.	3.46	3.67	3.81	3.95	3.96	4.25	.32**	
	Adj.	*3.58*	*3.79*	*3.81*	*3.90*	*3.88*	*4.17*		*.22***
Sup. Goal Emphasis	Unadj.	3.44	3.46	3.60	3.55	3.63	3.98	21**	
	Adj.	*3.61*	*3.61*	*3.58*	*3.47*	*3.52*	*3.89*		*.16**
Sup. Work Facil.	Unadj.	2.98	3.06	3.11	3.12	3.07	3.32	.13	
	Adj.	*3.05*	*3.12*	*3.06*	*3.09*	*3.05*	*3.31*		*.12*
Sup. Team Building	Unadj.	2.96	3.13	3.21	3.30	3.40	3.69	.25**	
	Adj.	*3.07*	*3.22*	*3.17*	*3.26*	*3.35*	*3.65*		*.20***

Table 6 (continued)

Index		Average Age of Group Members 17-21	21-23	23-27	27-31	31-36	36-52	Eta	Beta
Peer Leadership									
Peer Support	Unadj.	3.50	3.59	3.72	3.80	3.87	3.89	.21**	
	Adj.	*3.61*	*3.69*	*3.75*	*3.76*	*3.81*	*3.77*		*.10*
Peer Goal Emphasis	Unadj.	2.69	2.94	3.20	3.13	3.41	3.56	.35**	
	Adj.	*2.81*	*3.05*	*3.22*	*3.09*	*3.33*	*3.45*		*.25***
Peer Work Facil.	Unadj.	2.87	2.95	3.06	3.07	3.36	3.34	.24**	
	Adj.	*2.99*	*3.04*	*3.06*	*3.03*	*3.31*	*3.27*		*.17**
Peer Team Building	Unadj.	2.71	2.84	2.95	2.91	3.34	3.35	.30**	
	Adj.	*2.80*	*2.90*	*2.95*	*2.88*	*3.30*	*3.28*		*.24***
Group Process	Unadj.	3.26	3.41	3.58	3.57	3.76	3.85	.32**	
	Adj.	*3.38*	*3.52*	*3.60*	*3.52*	*3.69*	*3.74*		*.19***
Satisfaction	Unadj.	3.12	3.13	3.37	3.38	3.52	3.81	.36**	
	Adj.	*3.26*	*3.26*	*3.35*	*3.31*	*3.43*	*3.72*		*.25***
	N =	60	75	79	75	69	73		

* p < .05; ** p < .01

Thus, age alone also accounted for substantial portions of the variance in the indicators of organizational functioning. However, large differences existed in the extent to which organizational level served to moderate the effects of age. The largest drop in scores from the eta to the beta statistics was in the Motivational Conditions index (a drop from .54 to .38) where the eta was again the largest of the indices. The least drop was for Supervisory Work Facilitation where neither the eta nor the beta statistic was significant.

Relative Strength of Beta's For Age and Organizational Level

A comparison of the beta's from Tables 5 and 6 provided an indication of the factor accounting for the greatest proportions of the variance in the dependent variable controlling for the effects of the other factor. Of the five Organizational Climate indices, four were best predicted by age and one -- Communications Flow -- by level. However, as noted above, all beta statistics -- except for Lower Level Influence using level alone -- reached the designated level of significance. In general, the beta scores for these indices were approximately the same regardless of whether the focus was the effects of age or level. The differences between the beta scores for age and level in these five indices ranged from .02 to .11 points.

Two of the Supervisory Leadership indices -- Supervisory Goal Emphasis, Supervisory Work Facilitation -- were best predicted by organizational level and two -- Supervisory Support, Supervisory Team Building -- were best predicted by age. The only beta failing to reach the designated level of significance was associated with age as a predictor to Supervisory Work Facilitation. The differences in these beta scores ranged from .01 to .08.

Three Peer Leadership indices were best predicted by age while the fourth -- Peer Support -- was best predicted by level. The differences in these scores ranged from .01 to .12. The only non-significant beta score from these indices suggested that age alone is not a good predictor to Peer Support.

All beta scores for the Group Process and Satisfaction indices were significant. Little difference was found in the beta scores for Group Process (.19 vs. .23) and both beta scores for the Satisfaction index were .25.

Overall, the beta scores for organizational level and age were remarkably similar. Both factors appeared to account for significant portions of the variance in most of the 15 measures of organizational policies and practices in the U.S. Navy. Although age was the best predictor in a majority of the cases -- nine of the 14 in which differences between beta scores occurred -- more often than not, the differences between the beta scores were small -- an average difference of less than .06. Thus, with very few exceptions, both organizational level (defined in terms of the rank of the group's supervisor) and age (defined as the average age of group members) accounted for significant portions of the variance in these measures of organizational policies and practices.

RELATIONSHIPS AMONG MAJOR FACTORS

The final two questions posed at the beginning of this report referred to the relationships among major social-psychological factors in the Navy. Knowledge of the nature and strength of these relationships provided additional insights into the way the Navy functions and holds potential for recognizing the possible outcomes of efforts aimed at improving the Navy through affecting one or more aspects of its functioning. Through these analyses the relative effects of several factors such as Organizational Climate, Managerial Leadership, and Peer Leadership upon group functioning -- Group Process -- could be determined. This section includes an examination of the strenghts and patterns of major causal linkages and compares these with similar information from civilian organizations. The analysis procedures are basically those of multiple regression employing a path analysis strategy (Land, 1969). The methodology and results of similar analyses employing a civilian data set have been described in detail by Franklin (1973).

The model describing the relationships among these factors and individual as well as organizational outcomes is presented in Figure 7. This model is based upon the writings of Likert (1961, 1967); and has been expanded and tested by Likert and Bowers (1969, 1973), Bowers (in press), and Franklin (1973). "As the model suggests, organizational climate is the primary independent variable. Climate, along with individual differences -- i.e., knowledge, skills values -- are major determinants of managerial leadership behaviors which, together with organizational climate, shape peer leadership behaviors. These variables, in turn, determine group process. The final variables in this chain are individual outcomes -- i.e., satisfaction, health -- and organizational outcomes" i.e., efficiency, performance, etc. (Franklin, p. 19).

Table 7 and Figures 8 and 9 present and illustrate the results of analyses from the civilian and Navy samples focusing upon the four major factors.[2] The beta statistics (β) indicate how well each predictor accounts for the variance in the dependent variable while controlling for the effects of the other predictors. β^2 is the percent of variance accounted for by each predictor. The multiple correlation coefficient (R) indicates the total predictive ability of combinations of predictors. R^2 is the percent of variance accounted for by combinations of predictors taken together. The residual value ($\sqrt{1 - R^2}$) for each dependent variable describes the variance not accounted for by the predictors. These residuals are designated by the letters v, w, and x in Figures 8 and 9.

Looking first at the multiple correlation coefficients describing the ability of various combinations of predictors to account for the variance in the dependent variable -- Group Process -- only slight differences were observed between the Navy and civilian samples. The greatest difference occurred when Organizational Climate and Peer Leadership were combined. In this case the Navy predictors accounted for approximately 15% more variance than the civilian predictors. When all three factors were combined

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[2] The civilian data are from the previously cited report by Franklin.

Figure 7

RELATIONSHIPS AMONG
MAJOR SOCIAL-PSYCHOLOGICAL FACTORS
AND OUTCOMES

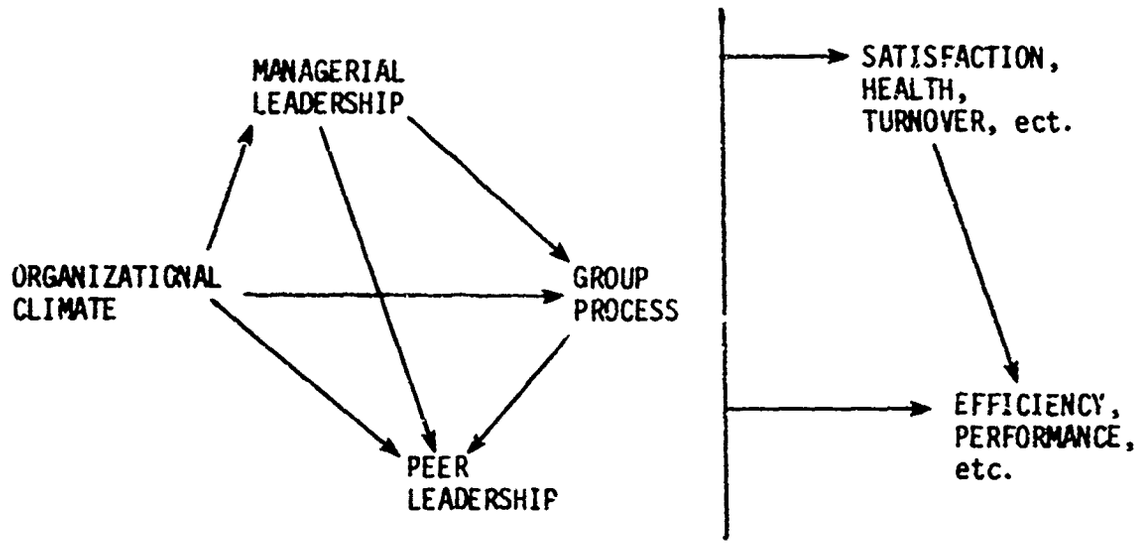


Table 7

BASIC STATISTICS FOR THE CIVILIAN* AND NAVY MODELS
ALL GROUPS AND LEVELS COMBINED

Predictor Variables		Dependent Variables 2 Managerial Leadership	3 Peer Leadership	4 Group Process
1-Organizational Climate				
Civilian	β	.60	.20	.42
Navy	β	*.58*	*.37*	*.16*
2-Managerial Leadership				
Civilian	β	--	.39	.13
Navy	β	--	*.37*	**
3-Peer Leadership				
Civilian	β	--	--	.47
Navy	β	--	--	*.76*
	R	.60	.52	.83
	R	*.58*	*.65*	*.86*

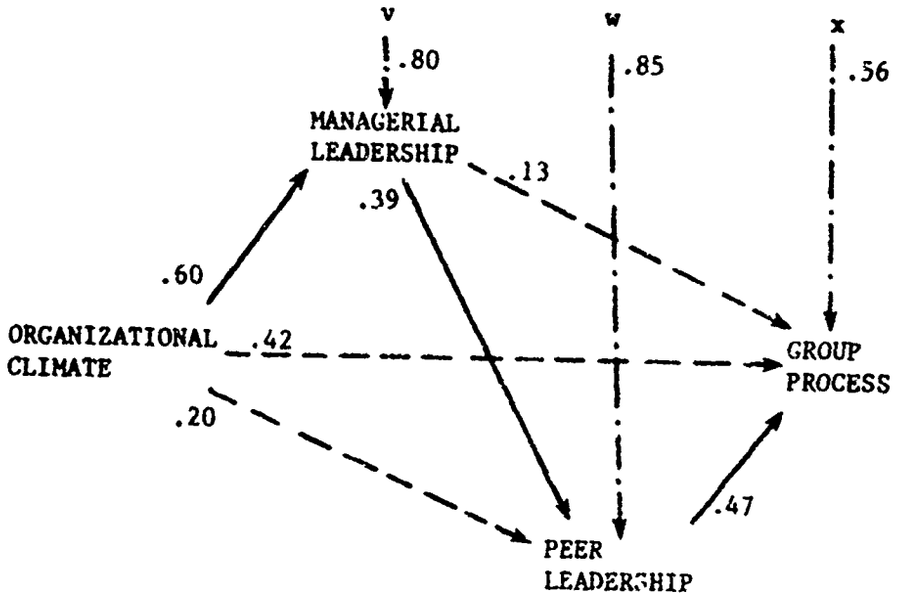
Civilian N = 246 groups
Navy N = 434 groups

* Data presented by Franklin (1973).

** In all cases where β < .10 the path has been eliminated.

Figure 8

RELATIONSHIPS AMONG MAJOR
SOCIAL-PSYCHOLOGICAL FACTORS,
CIVILIAN DATA (N = 246 GROUPS)



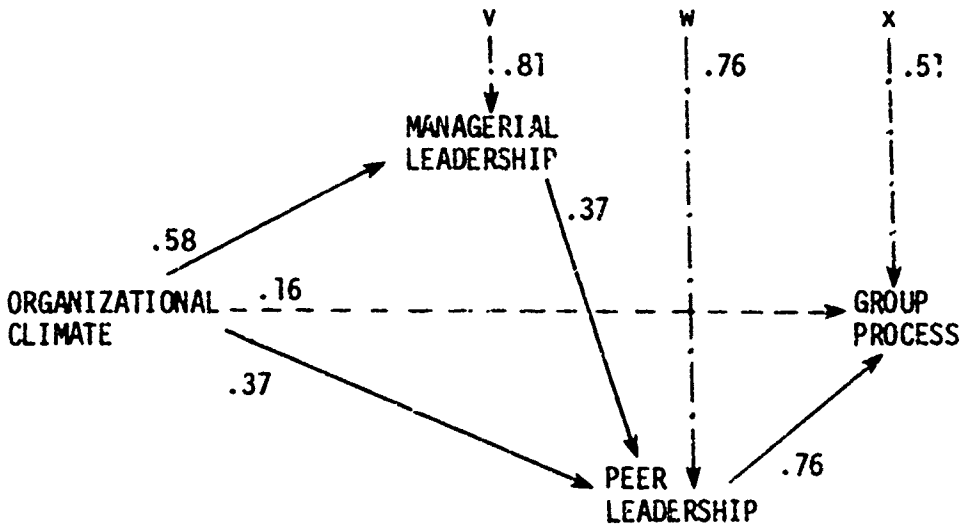
——— Best Predictor

– – – – – Secondary Predictor

——·——·Residual $(\sqrt{1-R^2})$

Figure 9

RELATIONSHIPS AMONG MAJOR
SOCIAL-PSYCHOLOGICAL FACTORS,
NAVY DATA (N = 434 GROUPS)



——— Best Predictor

- - - - - - Secondary Predictor

-·-·-·- Residual ($\sqrt{1-R^2}$)

the difference in variance accounted for was only about 5%, with the Navy again exceeding the civilian sample in predictive ability.

A comparison of the various beta weights describing linkages between pairs of factors for civilian and Navy samples suggested some similarities and some differences. The effect of Organizational Climate upon Managerial Leadership was approximately equal for both the civilian and Navy samples. This was also true for the effects of Managerial Leadership upon both Peer Leadership and Group Process.

Three notable differences in the strength of the beta statistics between the civilian and Navy data appeared. The smallest of these differences (.17) suggested that the Organizational Climate in the Navy had a somewhat more direct influence over Peer Leaderships behaviors than was true in civilian organizations. The two comparisons revealing larger descrepancies focused upon direct linkages to Group Process. These data suggested that the direct influence of Organizational Climate over Group Process was less in the Navy than in civilian organizations, (β = .16 vs. β = .42) and that the link between Peer Leadership and Group Process was considerably stronger in the Navy than in civilian organizations, (β = .76 vs. β = .47).

These differences suggested a slightly different pattern of major causal relationships among these four factors in Navy and civilian organizations. As illustrated in Figure 8, the major causal linkages found in the civilian data set suggested a rather clear flow from Organizational Climate to Managerial Leadership to Peer Leadership and ending with Group Process. However, the pattern emerging from the Navy data illustrated in Figure 9 suggested an equal influence of both Organizational Climate and Managerial Leadership upon Peer Leadership. Peer Leadership was clearly the major factor affecting Group Process. Thus, although the direct linkage between Organizational Climate and Group Process was less strong in the Navy, the indirect effect of Organizational Climate on Group Process through Peer Leadership appeared greater in the Navy than in civilian organizations. This, together with the decreased direct effect of Managerial Leadership over Group Process and the strength of the link between Peer Leadership and Group Process, indicated the great importance of Peer Leadership and those factors shaping these behaviors within the Navy.

SUMMARY

This investigation had as its major goal an expansion and clarification of information from earlier reports focusing upon the Navy as a functioning organization. Three areas of interest formed the bases of this study. The first was differences in policies and practices across organizational levels within the Navy, and comparability of these factors with appropriately matched levels from civilian organizations. The second area concerned the relative influences of organizational level and age upon the reported differences within the Navy. The third area of interest was with relationships among four major factors within the Navy and the comparability with similar relationships within civilian business and industrial organizations.

Although large differences were reported across the six organizational levels within the Navy, a comparison of these levels with norms from equivalent levels in civilian organizations suggested that the patterns of strengths and weaknesses across the levels were extremely consistent. *Of special concern were four areas of weakness prevading all or most of the six organizational levels: (1) the lack of concern for human resources as a vital part of the organization; (2) the absence of motivators inducing Navy personnel to work hard; (3) a lack of leadership behaviors that emphasize the importance of the task to be accomplished; and, (4) comparatively low levels of satisfaction with the place Navy personnel were assigned to work, the jobs they are assigned to do, and other persons in their work groups.*

An exploration of the effects of age and organizational level upon the reported differences in organizational policies and practices indicated that *both organizational level and age of group members accounted for large portions of the variance even when the effects of the other factor were controlled.*

The strength of relationships among Organizational Climate, Supervisory Leadership, Peer Leadership, and Group Process, and the basic causal pattern among these factors was somewhat different in the Navy than in civilian organizations. The comparison suggested that *in the Navy as*

compared with civilian organizations, Peer Leadership alone was a much more powerful determinant of Group Process, and, although Organizational Climate alone had less direct effect over Group Process, it did have a greater effect upon Peer Leadership, which in turn affected Group Process directly. These data indicated that even more than in civilian organizations, *Peer Leadership behaviors appear to be of utmost importance to organizational functioning within the Navy.*

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